

and trawlings along the American coast are specially important, bringing to light many new forms belonging to nearly all the invertebrate groups, and the first specimens of a new genus of nearly blind fish (*Bathypterois*). A résumé of all that has been added to our knowledge of the radiolaria is here inserted, with some excellent woodcuts which bring the structures of these beautiful organisms clearly before the eyes. On the way to Tristan da Cunha another new genus of fish (*Ipnoops*, Fig. 2) is brought up having a quite unique structure of eye which appears to be designed for detecting the presence of very small quantities of light at great depths, at the expense of all apparatus for forming an image. From Tristan da Cunha, of which an interesting description is given with good illustrations, the section of the South Atlantic is continued to the Cape of Good Hope. The tow-nets did not yield such a rich assemblage of life as in the more tropical parts of the ocean, but the account of this section is enlivened by a summary from Dr. Hjalmar Théel of Upsala, giving the results of his examination of the holothurioida collected during the whole cruise. One of the curious new forms described by him is shown in Fig. 3. From the Cape of Good Hope the *Challenger* strikes away south-eastward into the Antarctic regions, but a notice of the further progress of the cruise must be reserved till next week.

(To be continued.)

NOTES

THE death is announced at Lund, Sweden, of the distinguished physicist, Prof. A. W. Eklund, at the age of ninety years.

WE learn from *Science* that at the meeting of the American Association at Ann Arbor on August 26, the University will furnish electricity, either from a dynamo, from a storage-battery, or from primary batteries, as may be needed by members reading papers on electrical subjects. An evening reception on a day not specified will be given the association at the court-house, together with a lawn-party on the University grounds at the close of one of the regular sessions. The Excursions Committee has nearly completed arrangements for a trip, free of all expense, to the Saginaw Valley, including a steamboat run down the river, and view of the cities of Saginaw, East Saginaw, Bay City, and West Bay City, and the enormous industries in salt and lumber manufacture which have given the Saginaw Valley a world-wide celebrity. This valley produces annually a billion feet of lumber, and the excursionists will see half a billion piled on the docks. In conjunction with these vast lumber operations will be seen the production of salt on a scale unequalled in the world, and employing the various improved processes. The Committee has also arranged for excursions to Detroit and Mackinack Island, with side trips to Salt Marie, Pectoskey, and Marquette. Those wishing to make any special inquiries or arrangements should address Prof. J. W. Langley, local secretary, Ann Arbor.

A BARONETCY has been conferred upon Mr. Isaac Lowthian Bell.

THE Indian Government has sent a geological surveyor to report on the scientific aspects of the Cashmere earthquake of May 13. Further shocks are reported with renewed violence on June 24 and 25. A correspondent of a Calcutta journal, writing on the second day after the first great shock, says that the force of the earthquake appeared to have concentrated itself at certain spots, and there to have spent itself. These spots look as though a large amount of gaseous matter under the earth had, with the strength of dynamite, been struggling for an outlet, and had torn and lacerated the ground at the point where it found an exit. Thus villages are seen with the huts all destroyed, the

earth adjacent being cracked and split, and the air putrescent from the bodies of cattle buried under the houses, while not twenty yards distant a sloping, wooded hill seems untouched. In other places the side of a vertically-scarped hill has been sliced off as if by the guillotine, the earth so severed lying at the base. Some hill-sides are only partially disconnected, and a deep incision remains. Other hills present the appearance of an ordinary landslip. Near the village of Lalledourah three enormous chasms have been formed, one about three-quarters of a mile broad and 20 feet deep. Not far distant a tract of land 800 yards square has subsided, forming a trench 100 yards long, 50 feet deep, and 30 feet wide. The latest returns regarding the damage give the loss of life at 3081 persons, besides 25,000 sheep and goats and 8000 cattle. The number of dwellings destroyed is estimated at 75,000.

A VIOLENT shock of earthquake was felt at Douai, Dognies, and Flers-en-Escrebieux on Wednesday, June 22. The phenomenon was preceded by a rumbling sound, which is described as having resembled the distant report of a cannon. It occurred at ten minutes past four in the morning, when most of the inhabitants were still in bed. Many of them were awoken by the shock, and were so alarmed that they rushed in their night-clothes out of their houses into the streets and roads. The oscillation of the ground stopped a great many of the clocks. No very serious damage was done.

THE New York correspondent of the *Standard* telegraphs that the receipts from Prof. Tyndall's lectures in the States in the year 1872 now amount to a fund of 32,400 dollars. The Professor desired that the money should be devoted to the sustentation of science fellowships; but a difficulty arose in satisfying the conditions of the deed of gift, and meanwhile the money has accumulated. Acting, however, upon a suggestion from the trustees of the fund, Prof. Tyndall has now directed that the money shall be equally divided between the Universities of Columbia, Harvard, and Pennsylvania.

THE ninth anniversary meeting of the Sanitary Institute of Great Britain will be held, by the kind permission of the Board of Managers of the Royal Institution, in their Lecture Theatre, Albemarle Street, on Thursday, July 9, at 3 p.m. The chair will be taken by Sir John Lubbock, Bart., M.P., D.C.L., F.R.S. An address will be delivered by Prof. W. H. Corfield, M.A., M.D., entitled "The Water Supply of Ancient Roman Cities," and the medals and certificates awarded to the successful exhibitors at the Exhibition held at Dublin, in 1884, will be presented.

THE Organising Committee of the General Meeting of the Italian Meteorological Society, which meets in Florence from September 8 to 14, was held on May 15, under the Presidency of Prince Corsini, who was elected President of the General Meeting, the Vice-Presidents being Profs. Cecchi and Neucci, and the Secretary, Sig. Giovannetti; the Committee then divided into two Sections, one for scientific purposes, the other for practical and executive purposes.

THE Norwegian Government have contributed a sum of about 200*l.* for the prosecution of various researches during the summer, amongst which may be mentioned the zoological studies of Prof. R. Collett in East Finmarken; the entomological, malacological, and hydrographical studies of Dr. Schneider in the province of Tromsø; the researches of Dr. Johannsen on the appearance of struma in the vicinity of the lake Mjösen; and the algological studies of Herr Foslie on the south coast of Norway. A sum of 350*l.* has also been granted to the Society of Science at Christiania, as well as the usual annual grant to Dr. Sophus Tromholt for the prosecution of his studies of the aurora borealis.

ACCORDING to the Paris Correspondent of the *Times*, the Academy of Sciences, whose turn it is this year to award the Institute's biennial prize of 20,000f., has pronounced in favour of Dr. Brown Séguard.

ACCORDING to the Swedish papers, on the evening of June 19 a crane was shot at Orkened, in Scania, which had a parchment card tied to its neck with the following lines written in ink :—

I come from the burning sand
From Sudan, the murderers' land,
Where they told the lie,
That Gordon would die.

The bird had previously been wounded in the wing, and was very exhausted.

THE Japanese have at last, after much hesitation, promulgated a patent law. As in America, with respect to copyright, it was argued that with no patent protection the Japanese got the benefit of the inventions of the whole world. The new law appears, like many other recent Japanese laws, to be compiled from similar laws of other countries—a clause from England here, from France there, from Germany in another place, as seemed advisable in the circumstances. The term of protection is fifteen years; "articles that tend to disturb social tranquillity, or demoralise customs and fashions, or are injurious to health," and medicines cannot be patented; the inventions must have been publicly applied within two years, and patents will become void when the patented inventions have been imported from abroad and sold—an illiberal provision which prevents the patenting of foreign inventions in Japan unless the inventor also manufactures them in the country, and which therefore renders the new law practically useless to any but the Japanese inventor. The fees are low, amounting to about three pounds sterling for fifteen years' protection, the one payment down being sufficient, while there are no annuities or annual payments for keeping the protection in force, as in many European countries. The punishments for breaches of the regulations are sufficiently severe to act as a warning against infringement.

THE attention of all interested in the study of philology, comparative folk-lore, and cognate subjects, should be directed to a magazine which is now being published at Kandy in Ceylon. It has just completed its first year, and is called the *Orientalist*, the sub-title being "a monthly journal of Oriental literature, arts and sciences, folk-lore, &c." It is edited by a Singhalese gentleman, Mr. Goonetilleke, and its contributors are for the most part Singhalese. The last three numbers of the first volume are now before us, and among the contents we observe articles "on the terms of relationship in Singhalese and Tamil," the influence of the Portuguese and Dutch on these two languages, contributions to a descriptive catalogue of Sanskrit, Pali and Elu works extant in Ceylon, the progress of the Singhalese in literature, arts, and sciences. But folk-lore has, so far, been the strong point of the new magazine; it has published numerous articles on Singhalese proverbs and folk-lore; sometimes a popular tale amongst a particular Eastern people is started by a contributor, and is then pursued through other peoples having a parallel tale. These tales are translated in full, and are frequently accompanied by the originals. The address of the editor is Trincomalie Street, Kandy, Ceylon, and Messrs. Trübner are the agents for Europe.

WRITING to the *Times* on the subject of *Edelweiss*, Mr. Burbidge, of the Trinity College Botanical Gardens, Dublin, points out that the plant is easily grown in English gardens from seed. It is sown in common garden earth in a cold frame, and when large enough each little plant is placed in a small pot in a mixture of loamy earth and old lime rubbish, or the plants, he says, are equally well pleased by a niche in a sunny rock garden,

provided a supply of their favourite lime rubbish or old mortar be afforded them. Contrary to the generally received opinion, the *Edelweiss* is really a plant of extremely easy culture from seeds as here directed, and, further, good fresh seeds of it are quite readily obtainable from the usual sources of seed supply.

WE have received the first number of the *Bulletin* of the Society of Natural History of Brookville, Indiana, an association organised in 1881, according to the report, with excellent results in an enlarged interest in the study of nature, the establishment of a valuable museum, and the founding of a large and excellent library. Amongst the contents we notice papers on the stone mounds on the Whitewater; on the flora, fossils, and land and fresh-water mollusca of Franklin County, and on the fauna changes of the same district. The last paper is especially interesting, as showing the effects on the fauna of civilisation and its accompaniments, such as draining, cutting down forests, &c.

WE have received the fifteenth annual report of the Wellington College Natural Science Society. The observations conducted by the society have been carried on as usual, and the more important of them are published in detail; beyond this the report offers no new features for special comment.

WE notice in the issue of the St. Petersburg *Izvestia* (xx. 6) two papers by MM. Popoff and Kaistanoff on the customs of the Katchin Tartars of Minusinsk, with a notice, by M. Potanin, on wild plants used as food in Siberia. These last are numerous. The Katchin Tartars eat the grains of *Fagopyrum tataricum*; in the government of Irkutsk, during years of scarcity, the peasants add to their flour the *Polygonum convolvulus*. In Northern Mongolia the grains of *P. viviparum* (*oorgene* with the Mongols) are a common addition to food. The "ibseck," used by the Katchin Tartars, seems to be the *Cirsium acaule*, whose roots are eaten in Northern Mongolia. In Northern Siberia (Turukhansk, Yakutsk regions) the inhabitants eat the anti-scorbutic roots of the *Cochlearia sisymbroides*, Dec., var. *Czekanowskiana*, (Trautvetter). The exact determination of this plant is due to Czekanowski's expedition, for Middendorff had confounded it with the poisonous *Veratrum lobelianum*, Bernh., and he even saw in its eating a proof for the disparition of poisonous qualities of certain plants in a northern climate. When there is no pine-trees the Yakutes used to add to their sour milk a flour of dried roots of *Butomus umbellatus* instead of pine-bark. Great stores of these roots are usually made by Yakutes, who also use the grains of *Plantago media* and *P. canescens*, Adams. In the Khangai, M. Potanin was also shown a species of *Plantago* the fruits of which are eaten by the Khalkas Mongolians; but altogether, he observes, a confounding of *Polygonum* with *Plantago* has possibly been made by previous authors. We may add to this list that the *Lilium martagon* is eaten in large quantities in Transbaikalia, and that it is a common thing with the Buriates to pillage in the autumn the provisions of bulbs of this Lily made by the Arvicolæ, and to appropriate these provisions for themselves.

THE Stokes-Watson spark apparatus for showing the combustion of metals under the microscope, by the passage of the electric spark through them, made by Messrs. Watson and Sons, of High Holborn, from the design suggested by Prof. Stokes, was exhibited by Messrs. Watson at the *conversazione* of the Royal Society, Burlington House, on May 6, and again by them on Friday, June 5, at the Royal Institution. It is a most interesting apparatus, the different metals in combustion showing beautiful colours, and as the apparatus can be added to any ordinary microscope, no doubt it will become very popular.

THE Trilobites recently found in Eastern Siberia belong, according to Prof. Friedrich Schmidt, to very different ages. Those found in boulders on the Olenek (*Agnostus*, *Olenus*,

Anomocaxe) belong to the Cambrian, and are closely akin to those collected by Richthofen in China. From the Lower Silurian, the *Chasmops* of the Podkamennaya Tunguska is especially worthy of notice. It belongs to the Trentock level, as far as we may judge from corals from the same locality described by Prof. Lindström. Finally, Mr. Schmidt has received from Krasnoyarsk several samples of a new genus, the *Proetus*, which is closely akin to species from the sub-divisions F and G of Barrande.

THE additions to the Zoological Society's Gardens during the past week include a Barbary Ape (*Macacus inuus* ♂) from North Africa, presented by Capt. A. B. Hawes; two Common Badgers (*Meles taxus*) from Staffordshire, presented by Col. E. M. M. Buller; a Red Brocket (*Cariacus rufus* ♂) from Para, presented by Mr. H. E. Weaver; two — Fruit Pigeons (*Carpophaga* —) from the Samoan Islands, presented by Mr. T. H. Bowyer Bower, jun.; a Common Cuckoo (*Cuculus canorus*), British, presented by Mr. G. Lyon Leith; two Tuatera Lizards (*Sphenodon punctatus*) from New Zealand, presented by Mr. L. W. Buller; a Malbrouck Monkey (*Cercopithecus cynosurus* ♂) from West Africa, deposited; a Red-vented Parrot (*Pionus menstruus*) from South America, purchased; a Molucca Deer (*Cervus moluccensis*), a Thar (*Capra jemlaica*), born in the Gardens.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, JULY 5-11

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on July 5

Sun rises, 3h. 53m.; souths, 12h. 4m. 17.6s.; sets, 20h. 15m.; decl. on meridian, 22° 46' N.; Sidereal Time at Sunset, 15h. 11m.

Moon (at Last Quarter) rises, 23h. 25m.*; souths, 5h. 45m.; sets, 12h. 16m.; decl. on meridian, 3° 2' N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury ...	4 30 ...	12 45 ...	21 0 ...	23 19 N.
Venus ...	5 13 ...	13 16 ...	21 19 ...	21 28 N.
Mars ...	1 39 ...	9 47 ...	17 55 ...	22 15 N.
Jupiter ...	8 25 ...	15 27 ...	22 29 ...	11 19 N.
Saturn ...	2 55 ...	11 5 ...	19 15 ...	22 32 N.

* Indicates that the rising is that of the preceding day.

July	h.	
9 ...	21 ...	Mars in conjunction with and 5° 7' north of the Moon.
10 ...	23 ...	Saturn in conjunction with and 4° 7' north of the Moon.

GEOGRAPHICAL NOTES

IN concluding his notes on the Kurile islands, to the first instalment of which we have already referred, Prof. Milne has some interesting observations on the geology of this little known archipelago. The two islands, Iturup and Kunashiri, he says, form the two first of the series of stepping stones which connect Japan by means of Kamtschatka with Asia. They seem also to be the older members of the group. They contain a greater proportion of rounded hills and of deeply cut valleys than any of the islands farther north, and may therefore be regarded as older than those which are built up almost entirely of finely formed volcanic cones. The neighbouring island of Urup presents appearances similar to these two. He is inclined to think the formation of an island like Iturup commenced as a number of volcanic peaks forming islands, and that these have been subsequently united by elevation, indications of which there are in the stratified rocks and terrace formations. All the appearances, however, which he has ascribed to a raising of the land, might, he observes, be also explained by a raising and lowering of the sea, such, for instance, as that which Mr. Croll points out, might be produced by the accumulation of ice during a glacial period at the pole; and the fact that the height of the terraces increase

as we go northwards appears to confirm this view. The steepest slope which he has observed in any portion of a volcanic cone was that of a small cone rising from the upper crater of Chacha-nobori, which had an inclination of 37°. This would indicate that it was formed of extremely fine materials, and that the last eruption by which these materials were formed had not been very violent.

IT is announced from Lisbon that the Portuguese explorers, Capello and Ivens, who left Loanda some time ago, have discovered the sources of the Lualaba, Luapula, and Chambeze, the upper waters of the Congo.

AMONG the recent scientific missions ordered by the French Minister of Public Instruction we find the following:—M. Bordas, to study the zoology of the Madagascar Islands, of the Seychelles, and Comoros; M. Clermont-Ganneau, to examine the epigraphy of the islands in the Red Sea, situated at the entrance to the Gulf of Akaba; M. Morgan, mining engineer, on a geological and mineralogical mission in the Orange Free State, the Transvaal, Zululand, and Natal; Lieut. Palat, to explore the route from Senegal to Algeria by Medina, Timbuctoo, Mabrouk, and the Touat.

THE island in the North Pacific which appears now to be definitely added to the British Empire is not, as was at first supposed, Quelpaert, but another Korean island, or rather group of islands, known as Port Hamilton, about forty-five miles to the north-east of the former, and about thirty miles off the Korean coast, in the Broughton Channel, separating the peninsula from Japan. The position of the group is 34° 1' 23" N. lat., and 124° 57' 30" east of Paris. The port is surrounded by three larger islands, and several smaller ones. The largest of all is on the west, and runs from north-west to south-east; it is hilly, but the height of the main eminence is not given by Sir Edward Belcher. Between the two main islands is Observatory Island, and the whole inclose an excellent harbour. The islets, except in one or two channels, which serve as entrances to the bay, are connected by barriers or reefs, above which the water is shallow. The islands are poor in wood, but water is good and abundant, and the sea abounds in fish. There are no cattle, but pigs, fowls, and some vegetables are found. The group was visited in 1846 by Capt. Belcher, and in 1855 by a French frigate.

AT the last meeting of the Geographical Society of Paris Baron Benoist-Méchin described a recent journey in the Merv oasis. This was a continuation of previous communications to the Society of the great journey made by the Baron and some companions from Peking through Manchuria, thence through Siberia, south to Samarkhand, Merv, and so into Persia. M. Simonin made a communication on the pictorial writing of the North American Indians; it appears that, of all the tribes, only the Cherokees and the Creeks possess a writing. The former have newspapers and books in their language, and write with seventy-seven phonetic characters in a syllabary invented by a Cherokee in 1830. The Creeks have nineteen characters. The notorious Sioux chief, Sitting-Bull, has written his autobiography in pictorial writing. His "Caesar's Commentaries" are written on the back of a book which belonged to the Commissariat of the Third United States Infantry Regiment, and contain a recital of his adventures between 1864 and 1870. Each figure is roughly traced in ink, the men and horses being represented as a child might draw them; colours have in some cases been added to render the picture more vivid. The *Comptes Rendus* also contains the continuation of a paper by M. d'Aoust on the causes of earthquakes, and the itinerary of a journey in the basin of the Ruovouma by M. Angelvy, an engineer in the service of the Sultan of Zanzibar.

THE latest *Bulletin* (9^{me} année, No. 2) of the Royal Geographical Society of Belgium is mainly occupied by a paper by M. Hennequin on the agricultural maps of Belgium, with reference to certain maps recently produced by the military cartographic institute for the Ministry of Agriculture. A brief account of Guatemala by M. Leclercq is compiled from the official publications of that republic, and a paper by M. Haron on the commune of Manage (Hainaut) is an interesting study in local geography. It deals, under successive divisions and subdivisions, with the commune on four main heads—physical, economical, and political geography.

THE last *Zeitschrift* of the Berlin Geographical Society contains the following papers:—The conclusion of "Achelis's" article on the methods and task of ethnology; rivers and lakes